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From the foregoing description, it will be apparent that the method for determining a continuous map of the electrical activity of the endocardial surface of the present invention has a number of advantages, some of which have been described above and others of which are inherent in the invention. Also modifications can be made to the mapping probe without departing from the teachings of the present invention. Accordingly the scope of the invention is only to be limited as necessitated by the accompanying claims.

We claim:

1. An endocardial mapping catheter assembly comprising:
 - (a) a plurality of insulated wires braided throughout their length into an interlocking weave;
 - (b) a distal portion of the interlocking weave being expandable from a first generally cylindrical shape to a second expanded shape; and
 - (c) a plurality of electrodes on the distal portion of the insulated wires, each electrode in electrical communication with a single wire, and with each wire being in electrical communication with no more than a single electrode.
2. The endocardial mapping catheter assembly of claim 1, further comprising
 - d) an electrical plug on the proximal end of the interlocking weave, the electrical plug having a plurality of connections, each in electrical communication through one of the insulated wires to one of the electrodes.
3. The endocardial mapping catheter assembly of claim 1, wherein the interlocking weave further comprises a proximal non-expanding portion having a generally cylindrical shape.
4. The endocardial mapping catheter assembly of claim 3, wherein the proximal non-expanding portion is encapsulated in a biocompatible material.
5. The endocardial mapping catheter assembly of claim 4 wherein the biocompatible material is polyurethane.
6. The endocardial mapping catheter assembly of claim 4 wherein the distal expanding portion is not encapsulated in the biocompatible material.
7. The endocardial mapping catheter assembly of claim 1 wherein the second expanded shape is generally spherical.
8. The endocardial mapping catheter assembly of claim 1 wherein there are at least twenty-four electrodes.
9. The endocardial mapping catheter assembly of claim 1 further comprising an expandable balloon within the expandable distal portion of the wires.
10. An endocardial mapping catheter assembly comprising
 - (a) an elongated flexible lead body having an interior lumen and proximal and distal ends;
 - (b) at least twenty-four insulated wires in the lumen extending from the proximal to the distal end of the lead body, the wires collectively being braided together to form a wire assembly;

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- (c) an expandable portion of the wire assembly near the distal end of the flexible lead body, the expandable portion being expandable from a first generally cylindrical shape to a second expanded shape;
- (d) the majority of wires in the wire assembly each having a single electrode in the expandable portion of the wire assembly;
- (e) an electrical plug on the proximal end of the flexible lead body, the electrical plug having a plurality of connections, each connection being in electrical communication with one of the wires.
11. An endocardial mapping catheter assembly comprising:
 - (a) a plurality of insulated wires surrounded by an insulating material,
 - (b) a braid comprised of a combination of the insulated wires in an interlocking weave,
 - (c) a flexible material surrounding a first portion of the braid, forming a flexible lead body, the flexible material not surrounding a second portion of the braid, the second portion of the braid forming an array, the array being deformable into a predictable geometric shape,
 - (d) at least twenty-four electrodes on the braided wire array, each electrode in electronic communication with a single wire in the array.
12. The catheter assembly of claim 11 wherein the electrode is a gap in the insulating material surrounding the wire.
13. The catheter assembly of claim 11, wherein the flexible material is polyurethane.
14. The catheter assembly of claim 11, further comprising
 - e) an expandable balloon within the array.
15. The catheter assembly of claim 11, wherein the braid forms a lumen.
16. The catheter assembly of claim 15 further comprising a reference catheter in the lumen, the reference catheter having a tip electrode.
17. The catheter assembly of claim 16 wherein the reference catheter is movable relative to the braid within the lumen.
18. The catheter assembly of claim 17, further comprising
 - e) an electrical connector adapted for connection to an external monitoring device, the tip electrode of the reference catheter as well as each wire in the braid having an electrode being in electrical communication with a particular location on the electrical connector.
19. The catheter assembly of claim 11, further comprising
 - e) an electrical connector adapted for connection to an external monitoring device, each wire in the braid having an electrode being in electrical communication with a particular location on the electrical connector.

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